HOLME DODSWORTH METALS LIMITED
www.holmedodsworth.com

PB102 / CW451K is the most widely used grade of wrought phosphor bronze in the UK. It contains additions of ~5% Tin and up to 0.4% phosphorus to enhance its wear resistance, mechanical strength and stiffness and corrosion resistance.

The 5% tin containing alloy offers superb spring qualities, a high fatigue resistance, excellent cold forming properties and a corrosion resistance almost equivalent to Aluminium Bronzes in many atmospheric conditions.

PB102 / CW451K also offers a reasonable machinability (20-25% that of free machining brass = 100%), with an excellent soldering, brazing and butt welding capability. It can also be joined reasonably easily using spot welding and gas shielded arc welding, seam welding and coated metal arc welding.

Related Specifications

PB102	CW451K
C51000	DEF STAN 02-838
NES 838	ISO CuSn5

Mechanical Properties (specification minima 18mm to 40mm dia)

Tensile Strength	460N/mm²
0.2% Proof Stress	380N/mm²
Elongation	12%

Key Features

- Good mechanical properties
- Excellent cold forming properties
- High wear resistance
- Very good corrosion resistance
- Easily joined by brazing and welding
- Low coefficient of friction
- Good spring properties

Typical Physical Properties

Density	8.85 gm/cm^3
Melting Point	1050^{0}C
Thermal Conductivity	69 W/m^{0}C
Coeff. of Thermal Expansion 20-300^{0}C	17.8 x 10^{-6}
Electrical Conductivity 20^{0}C	15% IACS
Specific Heat	377 J/Kg^{0}K

Fabrication Properties

Annealing Temperature	675-745^{0}C
Stress Relieving temperature	200-350^{0}C
Hot formability	Limited
Cold Formability	Excellent
Machinability Rating	20%

Joining Methods

Soldering	Excellent
Brazing	Excellent
Gas shielded arc welding	Good
Coated metal arc welding	Fair
Resistance welding: Spot	Good
Seam	Fair
Butt	Excellent

Typical Applications

Due to its versatility the CW451K / PB102 is utilised in most industrial sectors with some typical applications including marine and chemical hardware, fasteners, pump and valve trim, bushes, bearings, electrical springs, contacts, connectors and switches, worm gears, springs, shafts, flanges, wear guides, architectural and decorative components, lock washers, spring washers and masonry fixings.